RHODE ISLAND REGION <u>DRAFT</u> SCREENING CRITERIA (04/24/2003)

	LEVEL 1 Area Exclusion	LEVEL 2	LEVEL 3
1*. Shellfish Habitat (Ocean quahog)**	Area is a highly productive shellfish habitat ($\geq$ 2.28 kg/m^2)	Site is a medium productive shellfish habitat ($\geq$ 0.652 kg/m^2 and $\leq$ 2.279 kg/m^2)	Site is a low productive shellfish habitat ($\leq$ 0.651 kg/m^2)
2a. Finfish Habitat – Total CPUE	Area is a highly productive finfish habitat ($\geq$ 2785 Catch Per Unit Effort [CPUE]***)	Site is a medium productive finfish habitat ($\geq$ 860 CPUE and $\leq$ 2784 CPUE)	Site is a low productive finfish habitat ($\leq$ 859 CPUE)
2b. Finfish Habitat – Top 11 Commercial Species	Area is a highly productive finfish habitat ($\geq$ 2245 CPUE)	Site is a medium productive finfish habitat ($\geq$ 665 CPUE and $\leq$ 2244 CPUE)	Site is a low productive finfish habitat ($\leq$ 664 CPUE)
3. Fish Migratory Path	Area significantly interferes with fish migration	Insignificant interference with fish migration	Site does not interfere with fish migration
4. Lobster Habitat	Area is a highly productive lobster habitat ($\geq$ 114 CPUE)	Site is a medium productive lobster habitat ($\geq$31 CPUE and $\leq$113 CPUE)	Site is a low productive lobster habitat ($\leq$ 30 CPUE)
5. Benthic Habitat	Site is characterized mostly by climax Stage III species	Site is characterized mostly by intermediate Stage II species	Site is characterized mostly by pioneer Stage I species
6. Shipping Lanes	Within active shipping lane	Near (within ½ nautical mile [nmi]) active shipping lane	Far (> ½ nmi) from active shipping lane
7. Ferry Routes	Within ferry route	Near (within ½ nmi) ferry route	Far (> ½ nmi) from ferry route
8. Recreational Racing		Within recreational racing route	Outside recreational racing route
9. ZSF	Site is not within ZSF		
10. Erosional Areas - Sediment Mobility	Area were sediment mobility is >3	Area were sediment mobility is >1 and <3	Area were sediment mobility is <1
11. Military Zone		Site within active military zone	Site not within military zone
12. Proximity to Sensitive Areas	Significant WQ impact to beach, shoreline, marine sanctuary (see list)	Insignificant WQ impact to beach, shoreline, marine sanctuary (see list)	No impact/or mitigatable through management
13. Proximity to Wildlife Refuge	Significant disturbance wildlife refuge (see list)	Insignificant disturbance wildlife refuge (see list)	No impact/or mitigatable through management
14. Historic Disposal	Not exclusionary	Not exclusionary	Previously used disposal site
15. Scientific Research	Significant impact to scientific research	Insignificant impact to scientific research	No impact

16. **Erosional State**	Site is erosional	Site is mixed	Site is containment
17. **Protected Areas**	Site is a protected area	Site near protected area	Site far from protected area
18. **Birds**	Significant impact to migratory/sea birds	Insignificant impact to migratory/sea birds	No impact/or mitigatable through management
19. **Marine Mammals**	Significant impact to marine mammals	Insignificant impact to marine mammals	No impact/or mitigatable through management
20. **Sea Turtles**	Significant impact to sea turtles	Insignificant impact to sea turtles	No impact/or mitigatable through management
21. **T and E Species (None)**	Significant impact to threatened or endangered species	Insignificant impact to threatened or endangered species	No impact/or mitigatable through management
22. **Active Utility Lines**	Utility area impacted	Site located near (within ¼ nm) active utility zone	Site distant (> ¼ nm) from active utility zone
23. **Site Dimensions**	Site is too small for mixing zone or volume of material		
24. **Recreational Activities**	Significant impact to recreational activities (fishing, diving, whale watching)	Insignificant impact to recreational activities (fishing, diving, whale watching)	No impact/or mitigatable through management
25. **Mineral Extraction (None)**	N/A	N/A	N/A
26. **Beneficial Use/Habitat Creation**			Site provides beneficial use of dredged material
27. **Cultural and Historical**	Significant impact to cultural and historical resources	Insignificant impact to cultural and historical resources	No impact
28. **Nuisance Species**	Creates significant development of nuisance species	Creates insignificant development of nuisance species	No impact

*Numbers do not indicate a priority.

**Ocean quahog was the only shellfish species for which quantitative data were available.

***CPUE = number of organisms/30 minute trawl

N/A = Not applicable

RATIONALE FOR SCREENING CRITERIA VALUES

1. Shellfish Habitat

The natural break method was used to derive the screening criteria values for ocean quahog density from data collected by Fogarty (1979) and Battelle (2003). This method identifies breakpoints between classes of data using a statistical formula (Jenk's optimization). Jenk's method minimizes the sum of the variance within each of the classes. Natural Breaks finds groupings and patterns inherent in the data.

2a and 2b. Finfish Habitat

The natural break method was used to derive the screening criteria values for finfish CPUE from 10 years of National Marine Fisheries Service (NMFS) trawl data. Total CPUE includes all finfish and lobster caught during the NMFS trawls. Top 10 commercial species include winter flounder, summer flounder, scup, butterfish, black sea bass, squid (all species), Atlantic herring, silver hake, red hake, and Atlantic mackerel. The NMFS data may be biased toward bottom dwelling species because of the sampling method (i.e. trawling).

4. Lobster Habitat

The natural break method was used to derive the screening criteria values for lobster CPUE from 10 years of NMFS trawl data.

5. Benthic Habitat

The benthic successional stages were used to derive the screening criteria values for benthic habitat. Stage-I assemblages are associated with pioneering or colonizing organisms, such as small tube-dwelling polychaetes at the surface that colonize in dense aggregations after a disturbance. Stage-III assemblages are typically found in areas of low disturbance and are considered to be at an advanced or equilibrium successional stage with subsurface feeding voids. Stage II is intermediate between I and III, and typically includes shallow-dwelling bivalves or tubiculous amphipods representing an intermediate community during the recolonization cycle.

6. Shipping Lanes

A ½ nautical mile buffer zone was placed around shipping lanes for screening.

7. Ferry Routes

A ½ nautical mile buffer zone was placed around ferry routes for screening.

10. Erosional Areas– Sediment Mobility Parameter

Sediment mobility depends on a number of physical characteristics associate with a given area and does not depend strictly on depth. Therefore, a sediment mobility parameter, rather than depth alone, was chosen as a screening parameter.   A model of sediment transport in the

presence of waves and currents was applied to the ZSF. Results were used to predict the distribution of sediment erodability or sediment mobility for different storm conditions (1-yr storm, 2-yr storm, etc.) over the ZSF and to define erosional areas, representing the areas within the ZSF where erosion, resuspension, and transport of bottom sediments can occur due to varying wave and current conditions.

The **sediment mobility parameter** is calculated as the ratio of the wave and current induced bottom shear stress to the critical threshold shear stress. Lower values indicate less energy is available for the erosion, resuspension, and transport of bottom sediments. Calibrating the model to observations of sediment characteristics throughout the ZSF, sediment mobility parameter values less than 1 indicate that wave and current energy are not sufficient to resuspend and transport even non-cohesive bottom sediments for the given storm conditions and would indicate depositional areas. Sediment mobility parameter values greater than 1 but less than 3 indicate that wave and current energy may occasionally be sufficient to mobilize non-cohesive bottom sediments and would indicate areas of sediment sorting and reworking. And sediment mobility parameter values greater than 3 indicate high wave and current energy environments and indicate areas of coarse-grained deposits and/or erosion or non-deposition.

22. Active Utility Lines

A ¼ nautical mile buffer zone was placed around active utility lines for screening.